UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/769,371	01/30/2004	Aland B. Adams	200314774-1	7916

22879 7590 07/17/2006

HEWLETT PACKARD COMPANY
P O BOX 272400, 3404 E. HARMONY ROAD
INTELLECTUAL PROPERTY ADMINISTRATION
FORT COLLINS, CO 80527-2400

EXAMINER	
LE, DIEU-MINH T	

ART UNIT	PAPER NUMBER
2114	

DATE MAILED: 07/17/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/769,371	ADAMS ET AL.	
	Examiner	Art Unit	
	Dieu-Minh Le	2114	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 July 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *30 January 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *01/30/04*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Part III DETAILED ACTION

Specification

1. This Office Action is in response to the application 10/769,371 filed on 07/26/04.

2. Claims 1-20 are presented for examination.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 1-6 are rejected under 35 U.S.C 101 because the claimed invention is directed to non-statutory subject matter.

As per claim 1, Applicant claims "At least one machine-readable media…", not having computer instructions/code, **stored in a computer readable medium** and being **executed by a computer**. A computer program, not having computer instructions **being executed by a computer** or without the computer-readable medium needed to realize the computer program's functionality, is nonstatutory functional descriptive material [See MPEP 2106].

The examiner recommends that if the applicant is trying claim a product claim, the following example is suggest:
(A machine readable medium having stored thereon data representing … of instructions, the … instructions which, when executed by a machine, cause the machine to perform … of instructions in a system…)
Appropriate correction is required.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 1-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nolan et al. (U.S. 6,640,278 hereafter referred to as Nolan) in view of Srikrishna et al. (U.S.Pub. No. 2005/0129005 hereafter referred to as Srikrishna).

As per claim 1:

Nolan substantially teaches the invention. Nolan teaches:

- At least one machine-readable media comprising: first program code to determine a route [***routing*** col. 26, lines 24-45] path through a gateway to a storage area network (***SAN***) for each of a plurality of addresses of an interface

of a server [abstract, fig.1-5, col. 1, lines 25-30; col. 2, lines 3-17];

- the first program code to determine the route path [fig.1-5, abstract, col. 3, lines 1-20];

- second program code to configure the gateway with the route paths [fig.1-3, abstract, col. 2, lines 42-67];

Nolan does not explicitly address:

- an algorithm to one or more numerical values associated with the address.

However, Nolan does disclose capability of:

- A method for configuration and management of storage area network (SAN) [abstract, fig.1-5, col. 1, lines 25-30; col. 2, lines 3-17] comprising:

- a connectivity among servers, host computer, SAN, switches, gateway, etc… via ***network interfaces (i.e., server, SAN, data devices network interfaces/ NIC)*** [fig. 1-5 and 11, col. 4, lines 64 through col. 5, lines 54; col. 15, lines 26-59].

- ***virtual circuit/storage transaction/ driver algorithm, data storage routing and mirroring algorithm, specification cache size algorithm, data handling/management/read/write***

of data speed, traffic algorithm, etc… [[col. 21, lines 27-52, col. 27, lines 13-18, col. 30, lines 46 through col. 31, lines 20].

In addition, Srikrishua explicitly teaches:

- A method, ***computer readable medium***, and apparatus for determining an optimal routing based upon path quality of routes in a mess network including gateway, servers, storage area network (SAN) or mass storage device [abstract, fig. 1-4, col. 1, par. 0002; col. 5, par. 0061] comprising:
- ***a control algorithm used via routing path quality, data latency variable, data transmission QOS, routing statistic via data packet addresses*** [col. 6, par.0076-0081] as well as a ***first, second, third routing measurement determination*** [fig. 5, col. 5, par. 0063-0070.

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of Applicant's invention to first realizing Nolan's ***virtual circuit/storage transaction/ driver algorithm, data storage routing and mirroring algorithm, specification cache size algorithm, and data handling/management/read/write of data speed, traffic algorithm***

as being the an algorithm to one or more numerical values associated with the address as claimed by Applicant. This is because Noland explicitly performed multiple data routing (i.e., paths), data configuring, data transmission optimization via routing algorithm in supporting the most data routing efficiency and maximizing data communication links system including failure detection and recovery via data/error monitoring, detecting, and correcting processes (i.e., failover). By utilizing these capabilities, the communication path between the data storage device or storage area network and information data communication system (i.e., host/servers/gateways/switches environment) can be directed or redirected promptly and functioned properly during failover switching process in supporting the network routing and switching operation; second, by applying the ***control algorithm used via routing path quality, data latency variable, data transmission QOS, routing statistic via data packet addresses*** as well as a ***first, second, third routing measurement determination*** as taught by Srikrishua in conjunction with the method for configuration and management of storage area network as taught by Nolan, the multi-path routing communication SAN networking system including gateway and switches capabilities (i.e., OS failover or mess network) can enhance its operation performance, more specifically to ensuring

the best routing path applied along with its error detected, corrected routing addresses and protocol in the storage area network (SAN) area.

This modification would have been obvious because a person having ordinary skill in the art would have been motivated to do so to improve the routing system operation availability and network/system performance therein with a mechanism to enhance the data routing connectivity, data debugging, data reliability, and data throughput which eventually will increase its performance, such as data throughput between internal and external devices.

In addition, it would have been obvious to one having ordinary skill in the art at the time the invention was made to realize that a ***machine-readable media*** is a necessary item for such client-server, computer/host- server/controller storage area networking (SAN) system, more specifically, data routing and communication in supporting fail-over process. Since the software or program codes for completing a communication obviously needs a means for instruction or code means resided within the ***machine-readable media*** for performing the data routing, storing, receiving, transmitting operation via the SAN capability.

As per claims 2 and 6:

Nolan further teaches:

- wherein each of the addresses comprises an interface card number, a target number, and a logical unit number (LUN) and wherein the first program code determines the route path for each of the addresses by applying the algorithm to the interface card number, the target number, and the LUN ***(i.e., a connectivity among servers, host computer, SAN, switches, gateway, etc… via network interfaces (i.e., server, SAN, data devices network interfaces/ NIC***) [fig. 1-5 and 11, col. 4, lines 64 through col. 5, lines 54; col. 5, lines 7-29 col. 15, lines 26-59];
- third program code to determine the plurality of addresses based on configuration information of the server (i.e., first, second, and third addressing used for data routing and configuration of the server via SAN [col. 8, lines 55-62].

In addition, Srikrishua explicitly teaches:

- A method, ***computer readable medium***, and apparatus for determining an optimal routing based upon path quality of routes in a mess network including gateway, servers, storage area network (SAN) or mass storage device

[abstract, fig. 1-4, col. 1, par. 0002; col. 5, par. 0061] comprising:

- a control algorithm used via routing path quality, data latency variable, data transmission QOS, routing statistic via data packet addresses [col. 6, par.0076-0081] as well as a first, second, third routing measurement determination [fig. 5, col. 5, par. 0063-0070.

- ***a first, second, and third data routing configuration and measurement used to support the data routing and management through the storage area network (SAN)*** [col. 7, claims 1-7].

As per claims 3-5:

Nolan further teaches:

- the interface card number, a target number, and a logical unit number (LUN) ***(i.e., a connectivity among servers, host computer, SAN, switches, gateway, etc… via network interfaces (i.e., server, SAN, data devices network interfaces/ NIC)*** [fig. 1-5 and 11, col. 4, lines 64 through col. 5, lines 54; col. 5, lines 7-29 col. 15, lines 26-59];

- the second program code configures the gateway to route to a first interface of the gateway [fig.1-3, abstract, col. 2, lines 42-67];

Nolan does not explicitly address:

- modulo two of the sum.

However, Nolan does disclose capability of:

- virtual circuit/storage transaction/ driver algorithm, data storage routing and mirroring algorithm, specification cache size algorithm, data handling/management/read/write of data speed, traffic algorithm ***as well as LUN configuration and control*** [[col. 21, lines 27-52, col. 27, lines 13-18, col. 30, lines 46 through col. 31, lines 20].

In addition, Srikrishua explicitly teaches:

- A method, ***computer readable medium***, and apparatus for determining an optimal routing based upon path quality of routes in a mess network including gateway, servers, storage area network (SAN) or mass storage device [abstract, fig. 1-4, col. 1, par. 0002; col. 5, par. 0061] comprising:

- a control algorithm used via routing path quality, data latency variable, data transmission QOS, routing statistic via data packet addresses [col. 6, par.0076-0081] as well

as a first, second, third routing measurement determination [fig. 5, col. 5, par. 0063-0070].

- ***routing hop counts adding and configuration in supporting the SAN routing process*** [col. 3, par. 0035].

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of Applicant's invention to realize that the combination of Nolan's ***virtual circuit/storage transaction/ driver algorithm, data storage routing and mirroring algorithm, specification cache size algorithm, and data handling/management/read/write of data speed, traffic algorithm as well as LUN configuration and control*** and the Srikrishua's ***routing hop counts adding and configuration in supporting the SAN routing process*** do teach such applicant's ***modulo two of the sum*** limitation. This is because both Nolan and Srikrishua do applied the routing algorithm therein in supporting the data routing (i.e., paths), data configuring, data transmission optimization. By utilizing these capabilities, the modulo two of the sum feature is obvious embedded and used therein in order to achieve the best routing results for the SAN data communication. This is further obvious because this function is notoriously well known in the art of

data computing arena, such as data routing and configuration networking environment for the same reasons set forth as described in claim 1, **supra.**

As per claims 7-14:

Due to the similarity of claims 7-14 to claims 1-6 except for system comprising server interfaces, gateways, LUN, switches, fibre channel, SCSI interface, etc… instead of the machine readable media having program codes, LUN, server interfaces, etc… as described in claims 1-6; therefore, these claims are also rejected under the same rationale applied against claims 1-6. **In addition, all of the limitations have been noted in the rejection as per claims** 1-6. Such as ***a connectivity among switch, hubs, router, server, via SCSI, Ethernet, fibre channel interfaces are illustrated by Nolan as depicted in figures 1-2***, col. 5, lines 1-67]. In addition, Nolan explicitly demonstrated ***the network logic in determining routing path for the SAN*** [col. 36, lines 24-45]. Srikrishua explicitly teaches a method, ***computer readable medium***, and apparatus for determining an optimal routing based upon path quality of routes in a mess network including ***gateway, servers, storage area network (SAN) or mass storage device*** [abstract, fig. 1-4, col. 1, par. 0002; col. 5, par. 0061].

As per claims 15-20:

Due to the similarity of claims 15-20 to claims 1-6 and 7-14 except for a method comprising server interfaces, LUN, modulo sum, etc… instead of the machine readable media having program codes, LUN, server interfaces, etc…as well as system comprising server interfaces, gateways, LUN, switches, fibre channel, SCSI interface, etc… as described in claims 1-6 and 7-14, respectively; therefore, these claims are also rejected under the same rationale applied against claims 1-6. **In addition, all of the limitations have been noted in the rejection as per claims** 1-6. Such as ***a connectivity among switch, hubs, router, server, via SCSI, Ethernet, fibre channel interfaces are illustrated by Nolan as depicted in figures 1-2***, col. 5, lines 1-67]. In addition, Nolan explicitly demonstrated ***the network logic in determining routing path for the SAN*** [col. 36, lines 24-45]. Srikrishua explicitly teaches a method, ***computer readable medium***, and apparatus for determining an optimal routing based upon path quality of routes in a mess network including ***gateway, servers, storage area network (SAN) or mass storage device*** [abstract, fig. 1-4, col. 1, par. 0002; col. 5, par. 0061].

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

7. A shortened statutory period for response to this action is set to expired THREE (3) months, ZERO days from the date of this letter. Failure to respond within the period for response will cause the application to be abandoned. 35 U.S.C. 133.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dieu-Minh Le whose telephone number is (703)305-9408. The examiner can normally be reached on Monday - Thursday from 8:30 AM to 6:30 PM.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dieu-Minh Le whose telephone number is (571) 272-3660. The examiner can normally be reached on Monday - Thursday from 8:30 AM to 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Scott Baderman can be reached on (571)272-3644. The Tech Center 2100 phone number is (571) 272-2100.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

DIEU-MINH THAI LE
PRIMARY EXAMINER
ART UNIT 2114

DML
07/03/2006